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KENYA MARINE AND FISHERIES RESEARCH INSTITUTE
FRESH WATER SYSTEMS

A technical report on the assessment of the socio-economic effects of illegal fishing on Lake Victoria fisheries and recommendations for management

TECHNICAL REPORT

KMF/GoK/2021/C825(2)


MAY 2021

DOCUMENT CERTIFICATION

Certification by Director Freshwater Systems

I hereby certify that this report has been done under my supervision and submitted to the Director.

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Signature: 

Date: 17th May, 2021

Certification by Director General - KMFRI

I hereby acknowledge receipt of this Report

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Date: 21st May 2021

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We would like to acknowledge the government support through KMFRI under the GoK seed fund in supporting the field activity and development of this report. Much appreciation to the scientific and technical teams who participated in the data collection, analysis and report writing.

Abstract

Small scale fisheries provide several nutritional, food security and livelihood benefits, with prospects for poverty alleviation in developing countries. This study intended to highlight the social and economic effects of illegal fishing experienced by resource- dependent users in Lake Victoria fisheries. Using questionnaires and Focused Group Discussions (FGDs), data was collected from four most vulnerable landing sites to illegalities, and a spider-web analysis was conducted to determine the social and economic interrelationships and impacts of these illegalities. Likewise, a weighted composite index was developed across key indicator categories in order to generate a pooled perception score. Results indicate that fishing illegalities are dynamic and exert significant social, economic and ecological effects. Five (5) new undocumented illegalities were found to exist in various landing sites. The most pronounced socio-economics effects of illegal fishing included ignition of resource use conflicts (13%), challenges to sustainability (12%) and negative impacts on the health of fish consumers (12%). We recommend policy review in order to document emerging illegalities for enhanced monitoring, control and surveillance; and enhanced technical capacity support to BMUs to improve co-management initiatives.

Keywords

Lake Victoria, illegal fishing, socio-economic effects, emerging illegalities.

Introduction

Small scale fisheries provide several nutritional, food security and livelihood benefits, with prospects for poverty alleviation in developing countries where many artisanal fishing communities are trapped by income depravity (Neiland, 2004; Béné, 2007; Nayak, 2014). Further, these fisheries have been hailed for their massive inclusion of women (FAO, 2020), and generation of multiplier effects that promote national and regional economic development (Bavinck, 2014). Nonetheless, small scale fisheries face a confluence of socio-ecological and institutional challenges ranging from pollution; destructive fishing gears and methods; illegal, unreported and unregulated (IUU) fishing; open access; overfishing; weak management regimes; and climate change (FAO/RAP/FIPL, 2004, Béné, 2011; Song et al., 2019). Most of these challenges have anthropogenic origins but with spiral effects on the entire integrity of the fisheries ecosystems. Growing populations, unemployment, and few livelihood options position open access small-scale fisheries as suitable economic buffers thus leading to increased fishing pressure; whereas urbanization, industrialization and intensive agricultural practices largely contribute solid and non-solid waste pollution into fish habitats. In addition, increase in demand for fish and expansion of fish markets have availed ready markets which provide incentives for maximization of rents by fishers, even to unsustainable levels. These factors, coupled with environmental degradation resulting from climate change and weak governance of small-scale fisheries systems could exacerbate the already vulnerable status of dependent rural communities and undermine the food and livelihood benefits which they derive from the fisheries.

One example of these complex socio-ecological systems is the Lake Victoria fishery which is a shared water body among partner states of Kenya (6%), Uganda (43%) and Tanzania (51%). It provides the largest fresh water small-scale fishery in the world (Njiru et al., 2008). With a dense

basin population of about 40 million inhabitants (LVBC & GRID-Arendal. 2017), and an estimated 3 million people deriving their livelihood directly from the lake through provision of fishing inputs, fishing, fish trade and ancillary activities (Sayer, 2018), the lake's fishery provides substantial prospects for poverty alleviation in these riparian countries. In the year 2016, there were about 76,000 crafts operating in Lake Victoria across the three countries, with a total of 500 thousand mt of fish production worth USD 700 million (LVFO_a, 2016). The catch composition varies across species with dagaa (65%), Nile perch (19%), haplochromines (10%), and tilapia (2%) comprising the main commercial species (LVFO_b, 2016). At an estimated annual beach value above USD 300 million with a further export value of USD 400 million, the Nile perch leads (52%) in proportion of total monetary returns from the fishery, followed by dagaa (32%), tilapia (6%) and haplochromines (5%), while other species comprise the remainder (Mkumbo and Marshall 2015; LVFO_a, 2016).

Illegal fishing in Lake Victoria has been singled as the major contributor of declining fish catches (Etiegni et al., 2010). Illegalities within the Lake comprise of the use of gillnets below five inches (<5"); undersized Long line hooks of number 10 or smaller, the deployment of all sizes of monofilament gears, the use of beach seine nets, the use of harmful weeds, dynamite and cast nets (Gichuru et al., 2019). This study intended to highlight the social and economic effects of illegal fishing experienced by resource-dependent users in Lake Victoria fisheries. The specific objectives included:

- (i) To review the distribution of illegal fishing activities;
- (ii) To profile various socio-economic effects of illegal fishing practiced in Lake Victoria fishery;
- (iii) To rank relative socio-economic effect of existing illegalities among resource users;

A proper socio-economic assessment of fishing illegalities is apt to increase understanding on the push and pull factors which contribute to unsustainable resource use patterns. Besides, it provides insights on important tradeoffs and livelihood considerations that would make enforcement of conservation regulations more effective.

Materials and Methods

Study Area

This study was conducted in four landing sites along Lake Victoria Kenya (**Figure 1**). The study sample was arrived at using available secondary data from Lake Victoria Fisheries Frame survey 2016 report. From the FS 2016 dataset, Asat beach was chosen owing to its high number of boat seines; Honge for its relatively many monofilament nets, Bukoma for its numerous beach seines; and Sindo for prevalence of undersized nets and hooks. These beaches with the highest specific illegalities were selected in a geographically representative manner, taking into consideration the four riparian counties of Kisumu, Siaya, Busia and Homabay.

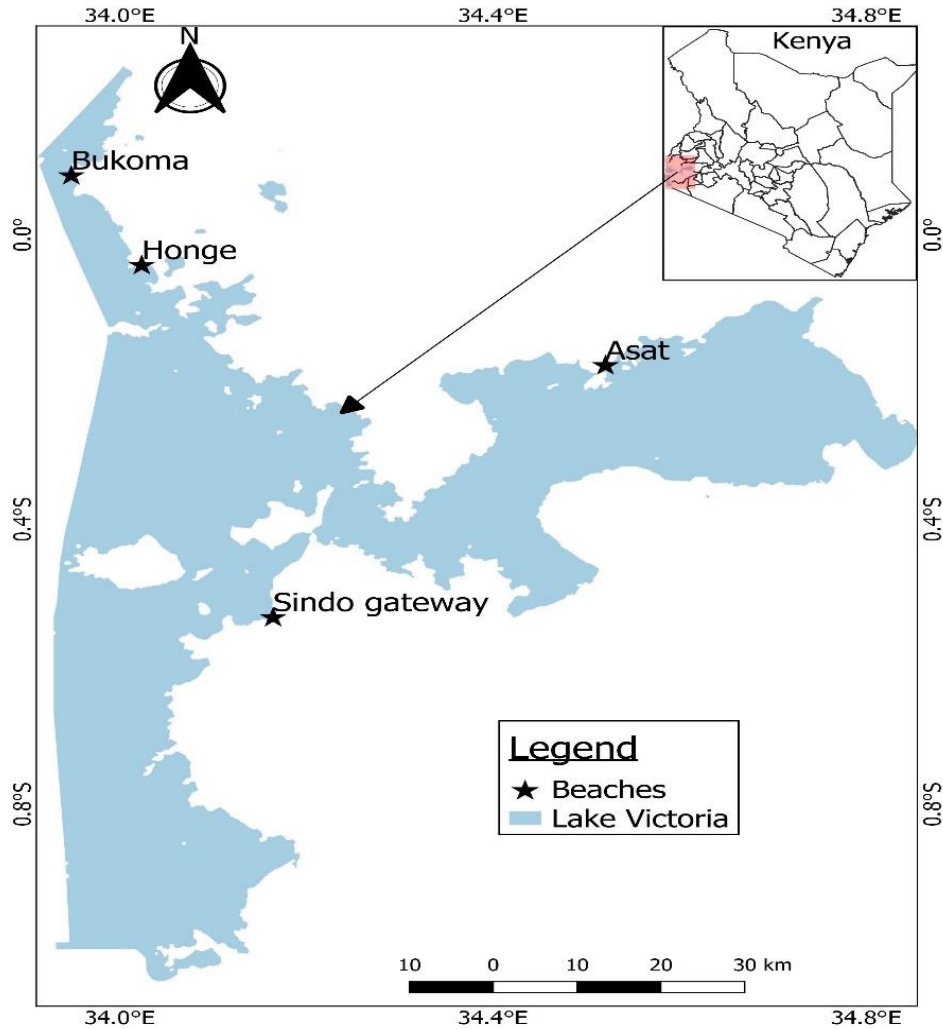


Figure 1. Sampled fish landing sites

Sampling strategy

The study adopted stratified purposive sampling across the landing sites of Lake Victoria. Backed by data from the Frame Survey 2016, landing sites which recorded high fishing illegalities were preferred for socio-economics assessment. None the less, considerations for time, resources and accessibility were used to determine the sample size and data collection duration.

Data collection

The main data tool was a semi-structured questionnaire; supplemented by observation and targeted Focus Group Discussions (FGDs). The questionnaire included a ranking matrix providing a six-point likert scale, meant to provide the relative effect of illegal fishing on the socio-economic welfare of Lake users. Observation and FGDs were used to provide documentary evidence and group perceptions useful in triangulation of results.



Figure 2. FGD at Honge Beach in Siaya County

Analyses

The data was processed in Ms Excel and SPSS softwares. Basic descriptive analysis was conducted in Ms Excel to generate summary tables, graphs and charts. A weighted composite index was developed across key indicator categories in order to generate a pooled perception score. A cross

tabulation of socio-economic impacts and illegal fishing methods was conducted and the results were visually displayed in the R-software.

Results and discussion

a) Socio-demographic characteristics

A total of 42 respondents were interviewed across the four landing sites in relation to illegal fishing activities (**Table 1**). As opposed to the research team’s perception of possible challenges in respondents’ engagement due to the sensitivity of the study subject, an extremely high respondent success rate was however realized owing to the significance of the research subject among target respondents. Many fishers, traders and managers were willing and eager to speak on fishing illegalities and generally terming the issue as a “persistent and unending menace”. Among those interviewed, 55% were fishers, 37% fish traders, while the rest were fisheries resources managers.

Table 1.

Distribution of respondents across the study sites

Landing beach	Frequency	Percent	Target	Variance	Success rate (%)
Asat	12	28.6	8	4	150.0
Honge	10	23.8	8	2	125.0
Bukoma	10	23.8	8	2	125.0
Sindo Gateway	10	23.8	8	2	125.0
Total	42	100.0	32	10	131.3

b) Illegal fishing activities in Lake Victoria

This study established that there were several emerging illegalities in Lake Victoria fisheries that were unknown in regulation documents but whose impacts were at times greater than documented illegalities (**Figure 3**). Whereas respondents perceived fish poisoning and the use of cast nets as the most negatively impacting documented illegalities, five (5) additional fishing illegalities were

cited as emergent in the various landing sites. Of these emerging illegalities, *combat* and *tematema* fishing methods were singled out to be the most destructive, with serious social and economic implications. These emerging illegalities were found to operate as follows:

i. Abungulu/Combat

This method clears macrophytes within a given area in the lake, left undisturbed for about one month, the fishers use a seine net to harvest fish that are attracted to the area. This method was common in Asat and Bukoma beaches. The method destroys fish habitat in breeding and nursery grounds.

ii. Bungu/Tematema

It's a more advanced method than Abungulu, after clearing an area and left for about a month, the fishermen surround an area, then scare the fish from the neighborhood into the net by disturbing macrophytes and hitting the water with a rod. The method is common in Bukoma.

iii. Sekeseke/Adimo

In this method, a fisher dives in the water then scares the fish from their hiding areas (rocky/areas with thick macrophytes) into the net. In Busia county, the method is called Sekeseke while in other counties, its referred to as Adimo

iv. Ikengele

This method is used in rocky areas where a bell-like rod is used to hit the rock producing sounds which scares fish from hiding rocks into the net.

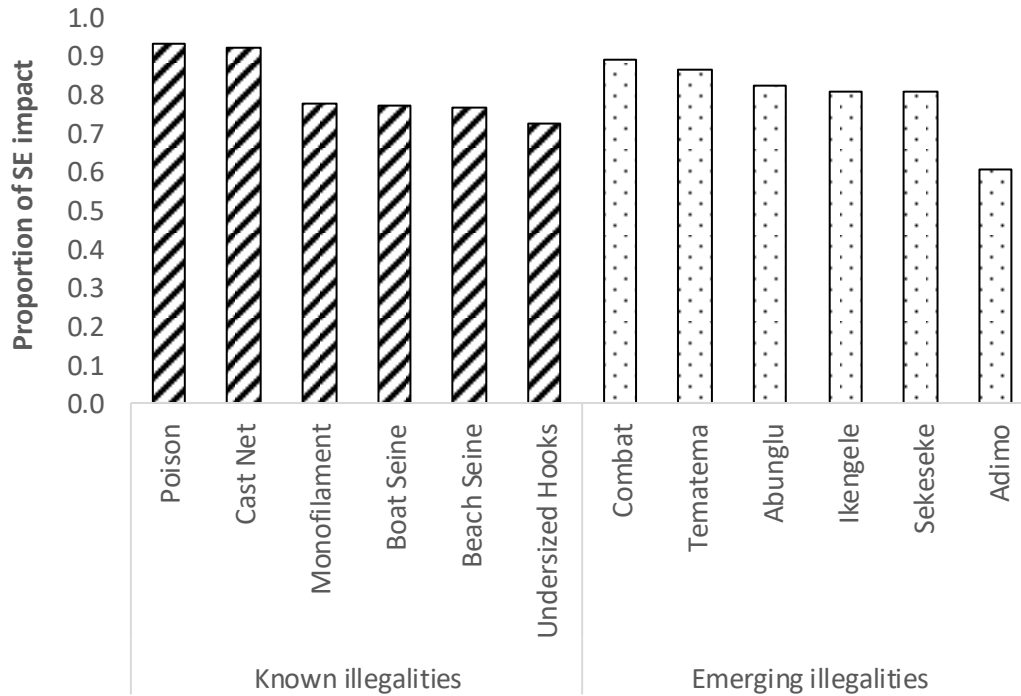


Figure 3. Perception on relative effects of various fishing activities in Lake Victoria

There is need for policy review in order to document emerging illegalities for enhanced monitoring, control and surveillance. As such, further studies examining the operation and socioeconomic motivations relating to the use of these emerging illegalities are highly recommended.

c) Effects of illegal fishing activities

The perceived impacts of fishing illegalities were found to range from social impacts, to economic and ecological effects (**Figure 4**). Of these the most pronounced impacts include ignition of resource use conflicts (13%), challenges of sustainability (12%) and negative impacts on the health of fish consumers (12%). It was however noticed that respondents perceived all the impacts of illegalities as very similar in terms of effects.

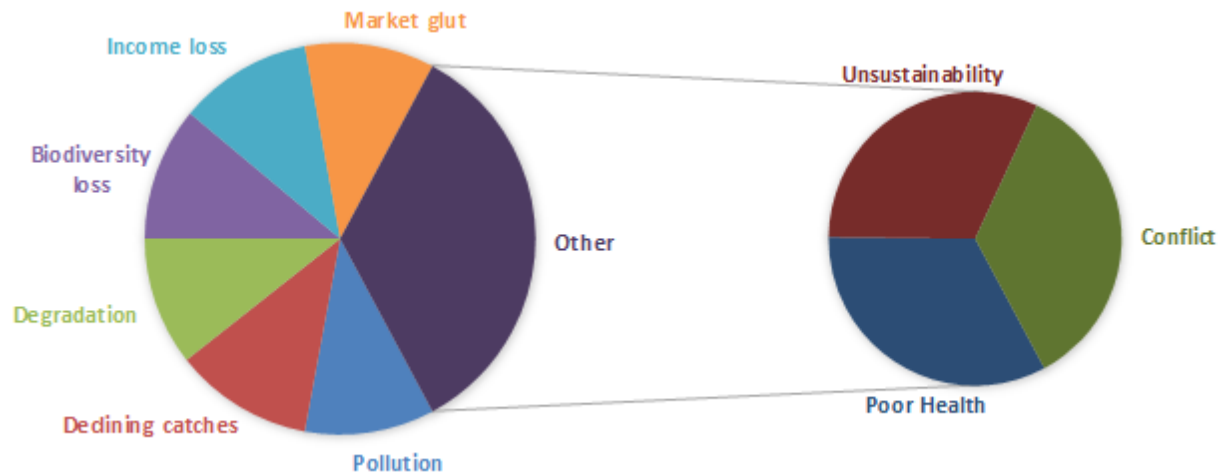


Figure 4. Social and economic effects of illegal fishing activities

i. Social effects of illegal fishing activities

The use of harmful substances in fishing, deployment of cast nets and the new illegality referred to as *tematema* were found to be the most devastating socially (Figure 5). These social effects traversed areas of human health, unsustainability in resource utilization patterns and resource use conflicts. Health was mainly influenced when harmful substances and herbs were used to poison fish as a means of quick harvesting. These substances were feared as potent for affecting the health of end consumers. On the other hand, erratic catches have created a phobia on the sustainability of fisheries resources in the lake. In a sense, whereas the use of illegal fishing methods increase economic rents through enhanced fish catches, they are apt to create an environmental degradation which can compromise future reproduction of fish stocks. With the witnessed notable decline in landed fish quantities since 2014 (MoALF, 2016), reality and intuition are already lending credence to this finding.

Whereas co-management framework was initiated with a view to enhancing fisheries management, surveillance and control, the BMUs have had varied success rates in performance of their delegated functions. Corruption, devolution, political interference and minimal funding were noted to

influence the effectiveness of various BMUs in curbing fishing illegalities. In instances of corruption or favoritism, kinsman-ship and nepotism greatly influence the course or degree to which offenders were punished. With the latent fear of being ostracized by their own kinsmen, most BMU officials shied from apprehending criminals who were related to them. In addition, given that BMUs are not armed, they had a growing fear of offenders whom they felt could attack them in retaliation. These social challenges provided ground for engaging a more capacitated coastal service in order to ensure impartiality in enforcement, and an idea of the Kenya Coast Guard Services was therefore most welcome. The challenges of political interference in BMUs as a political unit still remain at large, with no clear mitigation strategy in place.

There is great need for technical capacity building for the BMUs in order to make them more responsive to the ever changing dynamics of fishing illegalities in the co-management framework.

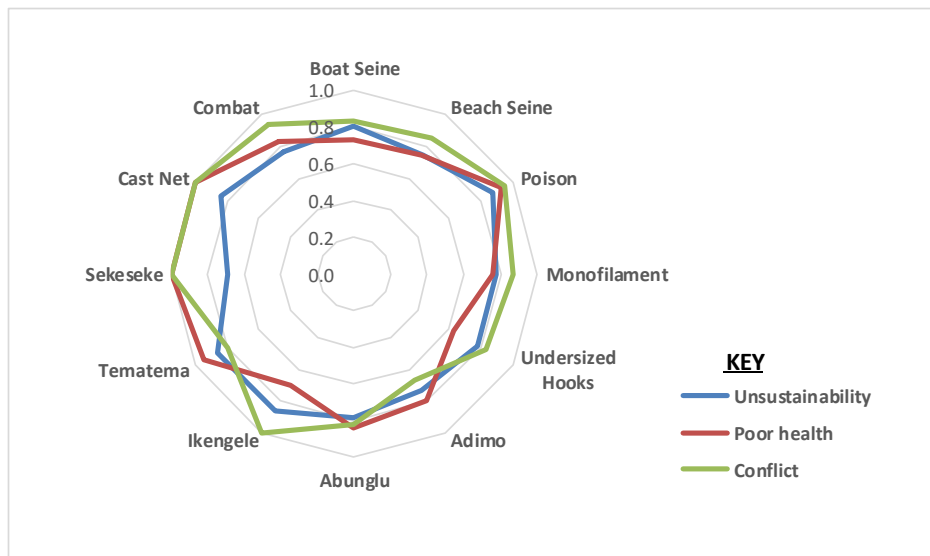


Figure 5. Social impacts of illegal fishing activities

i. Economic impacts of illegal fishing activities

As depicted in figure 6, most of the illegal fishing methods showed high economic effects ranging from loss of income, market glut and declining catches all resulting into economic loss. Poison (use of herbs) and Cast nets registered the highest overall economic loss. *Tematema* showed high impact on declining catches while *Adimo* registered the lowest impact in terms of market glut. The economic issues related to declining catches, income loss and market glut.

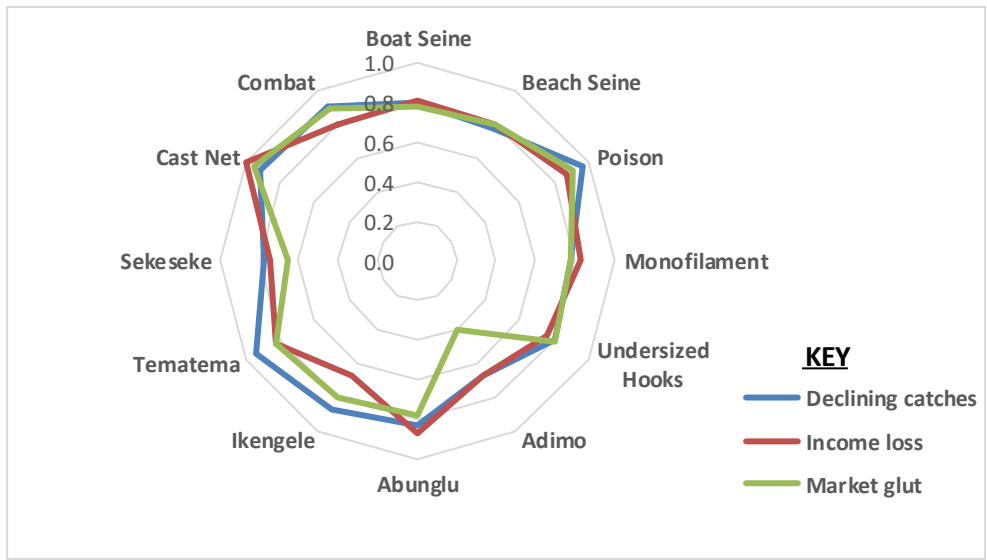


Figure 6. Economic effects of illegal fishing activities

ii. Ecological effects of illegal fishing activities

As depicted in figure 7, under ecological effects combat and poison (use of herbs) had the highest effects in all the three categories (pollution, biodiversity loss and habitat degradation).



Figure 7. Ecological effects of illegal fishing activities

Illegal fishing activities in Lake Victoria (Kenya) are on the increase. Compliance with fisheries regulation deters illegal fishing. Non-compliance can mainly be explained in terms of benefits of non-compliance and deterrence, while knowledge, social and moral considerations are less significant when it comes to people making a decision on whether to comply or violate. Eggert and Lokina (2010) have obtained similar results for Tanzanian Lake Victoria fisheries and reported higher non-compliance rates compared to those of fisheries in industrialized countries since Tanzanian fishers are poorer and could not afford moral and legitimacy concerns to the same extent as the fishers in industrialized countries. Kenyan fishermen know the immediate economic benefits of complying or violating a regulation, and nowadays they are being forced by the economic conditions to violate. Fishing is open to anyone who can pay for the required license. It is obvious, that the current resource base cannot support the present fishing pressure, but the fishermen are not willing to exit the fisheries as this is the only source of income for many of them. Another reason is the increasing market demand for fish, which cannot be attributed to the fish export trade, animal feed production and the increasing population only (Bokea and Ikiara 2000). Kenya provided remarkable incentives for investment in industrial fish processing in the past decades. The demand created from the industries coupled with lack of fish price control, ensured that fish business remained lucrative.

Illegal fishing has been identified as one of the main causes of fisheries decline in the lake (Etiegni et al., 2010, LVFO_a 2016.),. At that the illegalities were restricted to: monofilament, undersized gillnets , hooks, small seines, and beach seine as well as boat seine (*amuok*) but during this study new emerging illegalities like *abungulu*, poison (use of herbs) cast nets , *ikengele*, *tematema* were identified among others. This indicates that there is more pressure to the lake than it was before. Hence intensifying conflicts within and beyond our borders.

Conclusion

Results indicate that whereas respondents perceived fish poisoning and the use of cast nets as the most negatively impacting documented illegalities, five (5) additional fishing illegalities were cited as emergent in the various landing sites. Of these emerging illegalities, *combat* and *tematema* fishing methods were singled out to be the most destructive, with serious social and economic implications. Poison (use of herbs) and Cast nets registered the highest overall economic loss. Tematema showed high impact on declining catches while Adimo registered the lowest impact in terms of market glut. In terms of ecological effects; combat and poison (use of herbs) had the highest effects in all the three categories (pollution, biodiversity loss and habitat degradation) while harmful substances in fishing, deployment of cast nets and the new illegality referred to as *tematema* were the most devastating socially. The respondents perceived fish poison and use of cast nets as the most negatively impacting illegalities. Poison, deployment of cast nets and *tematema* were the most devastating socially, while poison (harmful substances) and cast nets were the most devastating economically. Combat and poison had the highest effects ecologically.

Recommendations for management

- Fishing pressure should be reduced by providing alternative livelihood and improved;
- There is need for policy review in order to document emerging illegalities for enhanced monitoring, control and surveillance;
- Further studies examining the operation and socioeconomic motivations relating to the use of these emerging illegalities are highly recommended.
- To allow fish stocks to recover and maintain ecological health, a reduction of fishing effort is recommended.

- There is great need for technical capacity building for the BMUs in order to make them more responsive to the ever changing dynamics of fishing illegalities in the co-management framework.
- There is need to set allowable catch and effort annually for a particular fishery. · For timely and prudent management of the fishery, regular monitoring of fish stocks and improvements in the provision of evidence- based advice for fisheries is critical and highly recommended.

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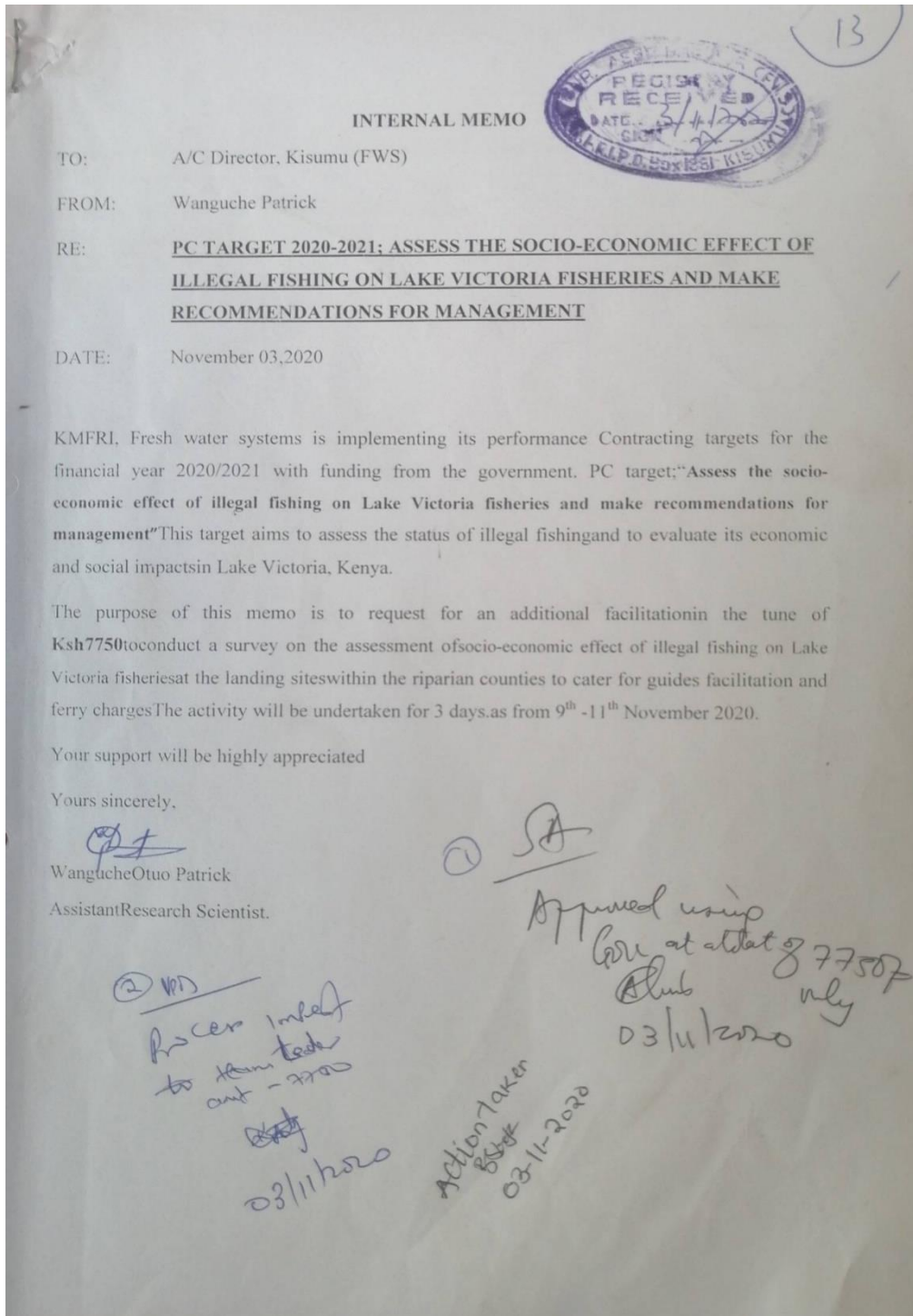
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Appendix 1. Paper Trail



Appendix 2: Protocol meeting for field data collection.

PROTOCOL MEETING HELD ON 05TH NOVEMBER 2020 AT THE CONFERENCE HALL FOR THE GoK 2020-2021 PC TARGETS

Agenda:

1. Protocol meeting for Performance Contracting Targets for FY: 2020-2021
2. A.O.B

Attendance:

- Attendance list attached. (Appendix 1)

Absent with an apology:

- Horace Owiti
- Megan Kinara

Meeting started at 0910hrs with opening remarks from Mr. Fred Guya and word of prayer from Mr. Zablon Awuonda. The chairman invited the DD-FWS, Dr Christopher Aura, to chair the meeting.

MIN 1/05/11/2020: PC TARGETS PROTOCOL MEETING

The chairman highlighted the limitations caused by Covid-19 pandemic on the budget allocation and called on all members to keep calm and be understanding of the situation. Members were called upon to keep time and the DD-FWS stressed on the need to observe time and always be punctual in meetings. The chair instructed that all absent members without an apology were to be excluded from undertaking on this activity unless they present a valid reason for absconding the meeting.

The chairman called upon the team-leaders to always ensure that all team members per group observed the laid-out Ministry of Health protocols in regards to Covid-19 spread control and personnel safety. Team leaders were called upon to make their protocol presentations:

- i. PC Target 1: Monitoring of the point sources of pollution in Lake Victoria for protection of ecosystem services and use. This team will be led by Mr. George Basweti. The team will undertake sampling of water from major rivers, river mouths and other point sources and this data will be crucial as this are the same point sources monitored by KIWASCO.
- ii. PC Target 2: Undertake continued bi-annual monitoring and mapping of water hyacinth and other macrophytes in Lake Victoria, Kenya for improved lake surveillance to inform lake users. This team will be led by Mr. Joseph Nyaundi. The team undertaking Target 1 and Target 2 will be undertaking their activities concurrently and thus had synchronized schedule and sampling places. The activity was pointed out to be a validation exercise and thus the team was tasked to come up with a correlation showing the water hyacinth locations as sampled vis a vis the macrophyte locations shown by the satellite imagery.

- iii. PC Target 3: Assess the ecological status of cage culture in relation to wild fisheries in Lake Victoria. This team will be led by Mr. Fred Guya. The team will undertake sampling and plans to use a plankton net to collect the zooplankton which will be preserved under formalin. This team was also tasked to collect samples on macroinvertebrates.
- iv. PC Target 4: Undertake mapping of Omena in comparison with Caridina fisheries for quality and safety assessment along the value chain in Lake Victoria to identify critical points for intervention. This team will be led by Monica Owili. The team will undertake the activity using a Focus Group Discussion protocol approach.
- v. PC Target 5: Assessment of the socioeconomic effect of illegal fishing in Lake Victoria. The team will be led by Mr. Patrick Otuo with the proposed protocols to be used being: Key Informant Questionnaire and Focused Group Discussions. Both Target 4 & 5 deploy a socioeconomic approach, on the FGDs, and were called to observe social distancing during the discussions. The team will undertake on understanding the major illegal fishing gears and their percentage contribution towards fishing illegality. Also, the team will undertake on understanding the local names of the fishing gears and also new and upcoming illegal fishing ways.
- vi. PC Target 6: Conducting an Economic and Financial Impact Assessment (EFIA) of Lake Victoria fisheries in Kenya and make recommendations for management. This will be a workshop held in Vihiga County, with the team already equipped with data collected from an LVFO sponsored project. The team will be led by Hilda Nyaboke. Part of the project data collection had already been done by July 2020 from funding by GIZ and the team will undertake to develop a report for the PC Target.
- vii. PC Target 7: Roll-out the revamped EFMIS application for increased fisheries data dissemination for blue growth. The team will be led by Eric Odari under supervision from Horace Owiti. The chairman noted that this was a roll-out action for an application and thus the reporting should be able to show the roll-out success.

MIN 2/05/11/2020: A.O.B

- Time observation was called upon by the chairman whilst respecting colleagues and other personnel in the field. This was to apply to all members, whether going to the field or attending the workshop.
- Also, timely surrender after the field work was advocated for to ensure effective and timely accountability. All members were called upon to carry out splendid and outstanding research work that reflects the quality of the institute.
- All members were called upon to be very serious about the Balanced Score Card.

Having no any other business, the meeting was adjourned by the DD-FWS with a word of prayer from Mr. Joseph Nyaundi at 1110hrs.

Minutes confirmed by:

Secretary: 

Chairman: 

KENYA MARINE AND FISHERIES RESEARCH INSTITUTE-KISUMU



PROTOCOL WORKSHOP IN PREPARATION FOR GOK 2020/2021 PC TARGETS FILED SURVEYS

DATE: 05 NOVEMBER 2020

ATTENDANCE LIST

NO	NAME	DEPARTMENT	E-MAIL	SIGN
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3	James Omolo	Research	omolo.james@gmail.com	
4	Monica Dwiki	Research	dwiki@kfmri.com	
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KENYA MARINE AND FISHERIES RESEARCH INSTITUTE-KISUMU



PROTOCOL WORKSHOP IN PREPARATION FOR GOK 2020/2021 PC TARGETS FILED SURVEYS

DATE: 05 NOVEMBER 2021

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KENYA MARINE AND FISHERIES RESEARCH INSTITUTE-KISUMU



PROTOCOL WORKSHOP IN PREPARATION FOR GOK 2020/2021 PC TARGETS FILED SURVEYS

DATE: 05 NOVEMBER 2020

ATTENDANCE LIST

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Appendix3: Field data collection tool.

a) Matrix ranking tool

KMFRI PC TARGET 2020-2021 WORK PLAN/PROTICAL.

ASSESSMENT OF THE SOCIO-ECONOMIC EFFECT OF ILLEGAL FISHING ON LAKE VICTORIA FISHERIES.


Lake Victoria is an important source of fresh water fish contributing significantly to the economy of Kenya. Its widely believed that there are high levels of illegal fishing activities around the lake. This constitutes the use of illegal fishing gears and methods which threaten the sustainability of Lake Victoria fisheries. In the financial year 2020-2021 KMFRI is undertaking a number of performance contracting targets. The title "assessment of the socio-economic effects of illegal fishing on Lake Victoria Fisheries." You are asked to rank the socio economic effects of illegal fishing method to capture the ecological, economic and social impacts in a scale of 0-5 using the Likert scale. Note that your participation is a representation of the larger group category and that the information provided will be treated with confidentiality.

Name	Phone	Landing site/beach	Category representing						
			Fisherman		Trader		Manager		
			Fisher	BMU	Artisanal	Commercial	Local administrator	BMU, FO or Coast guards	

There are different types of illegal fishing gears/fishing methods in Lake Victoria Fisheries with varying levels of socio economic impacts that can be divided into three major categories: Ecological, Economic and Social impacts. Score the flow of the impacts from the different illegal methods based on a scale of 0 to 5 where 0=no impact, 1=very low impact, 2=low flow, 3=medium impact, 4=high impact and 5=very high impact. NB: Definition of impact being to have a strong negative effect on someone or something in the area at a given time at this time the year 2020.

ILLEGAL GEAR USE/METHOD USED COVER CLASSES	ECOLOGICAL IMPACTS					ECONOMIC IMPACTS				SOCIAL IMPACTS		
	Pollution	Reduced catches	Habitat degradation	Change in spp		Income (kw)	Market (Glot)			Health	Sustainability	Improvement standard
Beal Seis (Amwok)				Change in spp								
Beal Seis (Kimba)				Compd S+re-								
Use of poison												

b) Focus Group Discussion Questions



KENYA MARINE AND FISHERIES RESEARCH INSTITUTE-KISUMU
PC TARGET 2020-2021: ASSESS THE SOCIO-ECONOMIC EFFECT OF ILLEGAL FISHING ON LAKE VICTORIA FISHERIES AND MAKE RECOMMENDATIONS FOR MANAGEMENT

DATE: November 03, 2020

FOCUS GROUP DISCUSSION

1. What are the main illegalities in this landing site?
2. What are the courses of these illegalities?
3. What proportion/number of fishers practice illegalities?
4. What are the socio-economic effects of these illegalities?
5. What management regulations do you have here concerning illegalities?
6. Do you implement the regulations? Explain.
7. Are there areas in which you still require support concerning management of illegalities?

Appendix 4: Work ticket field data collection.

These headings to be completed by issuing Officer

KENYA MARINE & FISHERIES RESEARCH INSTITUTE

TRANSPORT - DAILY WORK TICKET

DEPT. K KISUMU STATION P.O. BOX 1861 KISUMU 11617

PREVIOUS W.T. NO. 11609 REG. NO. UKA 5574 MAKE TOYOTA PRADO UNIT 1A5 1110 VOUCHER NO. 158100

Driver's Name and Number		Number, Name and Designation of Authorizing Officer		Specimen Signature of Authorizing Officer	
1 VENZINA WANDERA 1509 4		1 2025 DR. C. M. AVRA ADEI DIRECTOR (FWS)			
2		2 2017 DR. C. NYAMWERA ASST. DIRECTOR (Lim)			
3		3 0624 MR. PHILIP KIKWANI HUNTER			

(1)	(2)	(3)	4 No. and Signature of person authorizing Journey (4) (5)	Oil drawn (Litres) (6)	Fuel drawn (Litres) (7)	Voucher No. or L.P.O. No. (8)	9 Time		11 Reading end of Journey (11)	Kilometres of Journey (12)
							Out (9)	In (10)		
			0982 MR. LUCAS ALUOCH				4:10 PM	4:37 PM	370030	12
13-11-19	1	KMFRI - WIMBORI	1 SK				6:09 PM	6:15 PM	370033	3
14-11-19	1	WIMBORI - PIDOG	1 SK				9:25 AM	10:00 AM	370036	6
15-11-19	1	PIDOG - TOWN - WIMBORI - KMFRI	1 SK				11:00 AM	11:30 AM	370047	11
16-11-19	1	KMFRI - WIMBORI - PIDOG	1 SK				7:30 AM	7:50 AM	370054	7
18-11-19	1	PIDOG - TOWN - KMFRI	4 SK				11:36 AM	7:50 PM	370102	48
20-11-19	1	KMFRI - TOWN - WIMBORI - PIDOG	3 SK				6:18 AM	5:10 PM	370235	133
21-11-19	1	PIDOG - RAMBA - VUKA - TOWN - H/BAY	3 SK				8:00 AM	4:55 PM	370313	78
22-11-19	1	H/BAY - SORI - MBIJA - MUGERI / SORI	5 SK				01:45 PM	7:11 PM	370460	153
23-11-19	1	SORI - MBIJA - USENGE	5 SK				8:00 AM	6:05 PM	370660	200
24-11-19	1	USENGE - BONDO - BUSIA	5 SK				8:00 AM	6:15 PM	370809	149
25-11-19	1	BUSIA - MARENKA - BUSIA	5 SK				8:30 AM	2:00 PM	370750	141
26-11-19	1	BUSIA - KISUMU - MARENKA - KMFRI	5 SK				3:20 PM	5:24 PM	370973	23
27-11-19	1	KMFRI - TOWN - BACK - PIDOG	3 SK		69.51	026228	6:20 AM	8:00 AM	370986	13
27-11-19	1	PIDOG - TOWN - KMFRI	3 SK							

Appendix 5: Attendance list for field data collection.



KENYAMARINE AND FISHERIES RESEARCH INSTITUTE-KISUMU

PC TARGET 2020-2021; ASSESS THE SOCIO-ECONOMIC EFFECTS OF ILLEGAL FISHING ON LAKE VICTORIA FISHERIES
AND MAKE RECOMMENDATIONS FOR MANAGEMENT

ATTENDANCE LIST

NO	NAME	INSTITUTION	DESIGNATION	CONTACTS	9/11/2020	10/11/2020	11/11/2020	12/11/2020
1	WANGICHE PRINCE	KMFR I	Researcher	0710826449				
2	Nicholas Gichuru	KMFR I	Reader	0770406914				
3	Pamela Orla	KMPRI	Technical	0710659739				
4	JANE OBUU	KMFR I	Admin Ass I	0723308862				
5	OMWAMBA BASWETI	KMFR I	Technical	0722270859				
6								
7	VENZWA WANDERA	KMFR I	Driver	0722221065				

Appendix 6: A picture of KMFRI research team with participants after focus group discussion at Honge BMU



Appendix 8: Letter of report submission to KMFRI Director

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KENYA MARINE AND FISHERIES RESEARCH INSTITUTE

TELEPHONE: KISUMU 254770567443
E - mail: kmfkismucentre@yahoo.com
When replying please quote
Ref. No. KMF/RS/2021/ C5.i
If calling or telephoning ask
For: *Dr. Aura*
Please address your reply to
DIRECTOR GENERAL



KISUMU CENTRE
P.O. BOX 1881
KISUMU
KENYA
DATE: 17/05/2021

The Director General
Kenya Marine and Fisheries Research Institute
Headquarter and Mombasa Centre
P.O. Box 81651 080100
MOMBASA

RE: SUBMISSION OF TECHNICAL REPORT FOR PC PERIOD 2020-21

The above refers,

KMFRI Freshwater systems (FWS) have successfully implemented the 2020-2021 PC on
"the assessment of the socio-economic effects of illegal fishing on Lakes Victoria
Naivasha fisheries and recommendations for management".

Herein attached is the technical report and fact sheet, which highlights activities involved.

We therefore submit this report and fact sheet for your perusal and dissemination to the
relevant stakeholders. Your support is highly appreciated.

Thank you.

A handwritten signature in black ink, appearing to read 'Chris'.

Dr. Christopher M. Aura (PhD)
Ag. Director - FWS

Ag. Director (FWS) ✓
Dissemination
21/05/2021

Handwritten notes in blue ink, including 'Ag. Director (FWS) ✓', 'Dissemination', and '21/05/2021'. There is also a large, stylized signature in blue ink.



sheet



KENYA MARINE AND FISHERIES RESEARCH INSTITUTE

FRESH WATER SYSTEMS

KMF/GoK/2021/C5 (i)

A technical report on assessment of the economic effects of illegal fishing on Lake Victoria fisheries



A picture of KMFRI research team with FGD participants at Honge BMU.

“Illegal fishing could soon make fishing illegal”

AUTHORS

Wanguche, P., Owiti, H., Gichuru, N., Aura, C., Nyamweya, C., Oburu, J., Olela, P.

KMFRI Headquarters

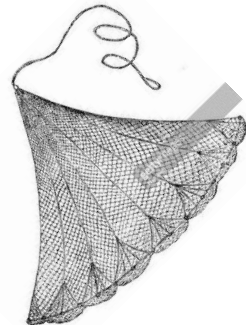
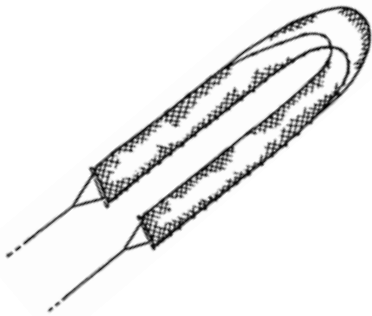
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KMFRI Kisumu Centre

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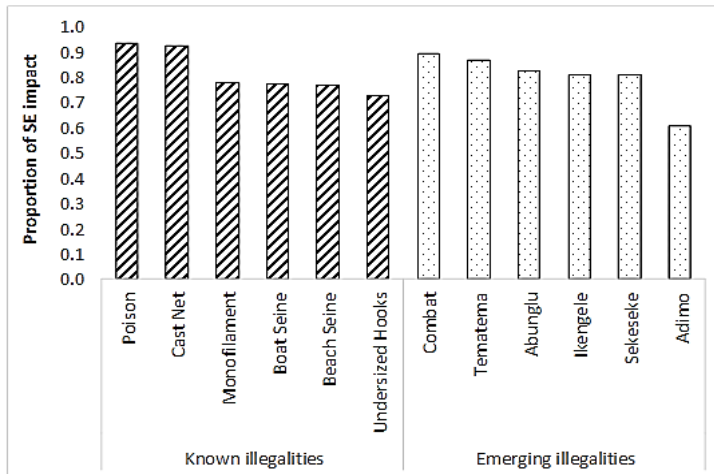
Background information

- ✓ Illegal fishing in Lake Victoria has been singled as the major contributor of declining fish catches;
- ✓ Illegalities within the Lake comprise of the use of gillnets below five inches (<5"); undersized Long line hooks of number 10 or smaller, the deployment of all sizes of monofilament gears, the use of beach seine nets, the use of harmful weeds, dynamite and cast nets;
- ✓ A proper socio-economic assessment of fishing illegalities is apt to increase understanding on the push and pull factors which contribute to unsustainable resource use patterns.



Results

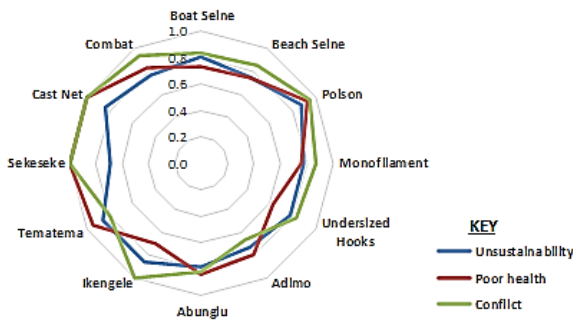
- ✓ Fish poisoning and the use of cast nets are the most negatively impacting documented illegalities;



- ✓ Combat and *tematema* were singled out as the most destructive, emerging illegalities with serious social and economic implications.

- ✓ Five (5) additional fishing illegalities were cited as emergent in the various landing sites.

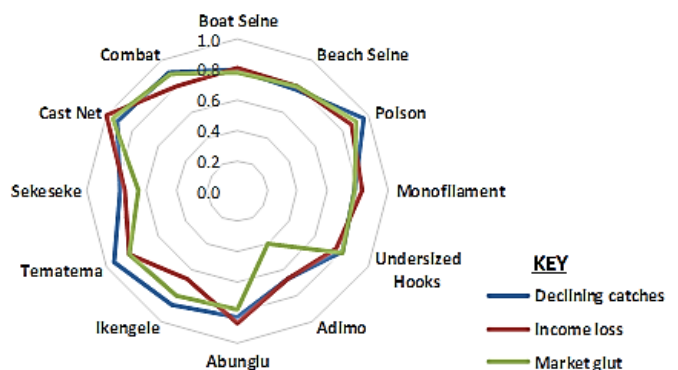
(a) Social effects of illegalities



- ✓ Health was mainly influenced when harmful substances and herbs were used to poison fish as a means of quick harvesting;
- ✓ Corruption, devolution, political interference and minimal funding were noted to influence the effectiveness of various BMUs in curbing fishing illegalities.

- ✓ Poison (use of herbs) and Cast nets registered the highest overall economic loss.
- ✓ *Tematema* showed high impact on declining catches while *Adimo* registered the lowest impact in terms of market glut.

(b) Economic effects of illegalities



Interventions/Recommendations for management

1. There is need for policy review in order to document emerging illegalities for enhanced monitoring, control and surveillance;

2. There is great need for technical capacity building for the BMUs in order to make them more responsive to the ever changing dynamics of fishing illegalities in the co-management framework.

RE: KMFRI FRESHWATER PC ACTIVITIES INFORMATION FOR RECORDS AND USE Yahoo/Sent

Christopher Aura Mulanda <auramulanda@yahoo.com>
To: Daniel Mungai, Lucy Obungu, Rodrick Kundu, Christine Adhiambo, Tom Guda and 3 more...
Cc: Nyamweya Chispine, Prof. Njiru James KMFRI Director, Jacob Ochiewo

Dear Stakeholders,
Hope fine. Herein attached please find factsheets for your information, use and for records on:




1. Effect of flooding on fish ecology;
2. Socio-economic effects of illegal fishing; and
3. Post-harvest losses of one major commercial fish;

Thank you.

Dr. Aura
FOR: DG - KMFRI.

Regards,
Dr. Christopher Mulanda Aura (PhD)
Kenya Marine and Fisheries Research Institute (KMFRI),
P.O. Box 1881-40100, Kisumu, Kenya.
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"Better life is always adjacent"

 FACT SHEET ...pdf 929.2kB	 Factsheet -ill...pdf 848.1kB	 Fact sheet o... pdf 884.8kB
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